

### **REMARKS**

Claims 1, 12 and 33 have been amended. Subsequent to the entry of the present amendment, claims 1-12, 33 and 34 remain pending in the application. Reconsideration of the application is respectfully requested in view of the above amendments and the following remarks. These amendments add no new matter as the claim language is fully supported by the specification and original claims.

#### **I. Rejections under 35 U.S.C. §112, Second Paragraph**

Claim 12 is rejected under 35 U.S.C. §112, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicants respectfully traverse this rejection.

The Office Action indicates that the phrase “at least some nanoparticles” is unclear about how many nanoparticles are required to provide “at least some”.

Claim 12 has been amended to remove the term “at least some of the nanoparticles further comprise” and replaced it with “any of the of the nanoparticles may further comprise”. Support for this can be found in the specification at paragraph [00032] as filed, or paragraph [0034] as published. Accordingly, Applicants respectfully request that the rejection of claim 12 under 35 U.S.C. §112 be withdrawn.

#### **II. Rejections under 35 U.S.C. §102**

Claims 1-5, 7-12, 33 and 34 are rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Schultz et al. (US 6,180,415 hereinafter “Schultz”). Applicants respectfully traverse this rejection.

The Office Action alleges that Shultz et al. teach a solid gel matrix comprising a gel suitable for separation of biomolecules within a gel electrophoresis (col. 6, line 65-col. 7, line 3)

and one or more SERS-enhancing nanoparticles (col. 10, lines 14-26; col 14, lines 21-43) contained in the gel (col. 30, lines 58-66) the SERS-enhancing nanoparticles (PRPs and PREs are nanoparticles, col. 8, lines 13-36) having an attached probe that binds specifically to an analyte (col. 23, lines 40-48 and 54-61); a sample containing at least one analyte (col. 5, lines 29-42 and lines 60-67); and an optical detection system suitable for detecting SERS signals from the nanoparticles (col. 10, lines 14-26; col. 2, lines 56-67).

Applicants have amended claims 1 and 33 to clarify that the solid gel matrix is “a combination of a solid gel suitable for separation of biomolecules within the gel by electrophoresis or magnetophoresis and one or more SERS-enhancing nanoparticles contained in the gel, the SERS-enhancing nanoparticles having an attached probe that binds specifically to an analyte”. Schultz does not teach such a combination.

A rejection of claims under 35 U.S.C. §102 is improper unless each and every element of the claimed subject matter is found, either expressly or inherently described, in a single prior art reference (*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631 (Fed. Cir. 1987); MPEP §2131). In addition, the elements must be arranged as required by the claim (*In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990); MPEP §2131).

First, looking at claim 1, Schultz does not teach each and every element of the claimed subject matter. The Office Action first alleges that Schultz discloses “a gel suitable for separation of biomolecules within a gel electrophoresis (col. 6, line 65-col. 7, line 3)”. Applicants respectfully disagree with this statement. The passage cited does not discuss any properties of a gel, only that “the target is a polynucleotide present as a separated band”. Nowhere in Schultz is there a discussion of gel properties, so it is unclear if the gel of Schultz is “gel suitable for separation of biomolecules within the gel by electrophoresis or magnetophoresis”, as required by the claims.

The Office Action further alleges that Schultz discloses “one or more SERS-enhancing nanoparticles (col. 10, lines 14-26; col 14, lines 21-43) contained in the gel (col. 30, lines 58-66)”. Applicants again respectfully disagree with this statement. For the first portion, a reading of Schultz discloses that SERS “exploits the localized plasmon resonance in roughened or particle coated silver films to enhance the Raman scattering of various materials by as much as six orders of magnitude” (Schultz, col. 10, lines 20-23). As can be seen by this passage in Schultz, the particles are on a particle coated silver film, not contain within a gel. For the second portion, the Office Action refers to a passage that is *20 columns later* in the patent, where Schultz discloses that “Radiation pressure may be also used to force PRPs through a matrix” and “If bound and free PRPs are subject to electrophoresis in, for example, an agarose or acrylamide gel, the free PRPs migrate faster than do the bound PRPs” (col. 30, lines 58-66). This passage clearly refers to separation of PRPs in a gel, not SERS-enhancing nanoparticles within the gel, as required in the claims. It appears that the combination of these passages do not disclose “one or more SERS-enhancing nanoparticles contained in the gel”, as alleged by the Office Action.

In addition, Applicants would like to point out that Schultz teaches that PRPs are not contained in the gel, as alleged in the Office Action, but are exposed to the surface of the gel. Schultz states “the target is a polynucleotide present as a separated band in an electrophoresis gel, and the contacting is carried out by *exposing the surface* of the gel to PRPs under hybridization conditions” (col. 6, line 65 - col. 7, line 1) (emphasis added). This teaching of Schultz clearly indicates that there are no “SERS-enhancing nanoparticles contained in the gel”, as required by the claims.

Second, if the allegations of the Office Action are accurate and Schultz includes many individual elements of the present claims, it is clear that elements Schultz are not “arranged as required by the claim”. As can be seen from the rejection, the Office Action cites many different passages in Schultz, with many of them related to different embodiments. For example, the rejection of claim 1 in the Office Action refers to six different passages in Schultz (columns 6,

10, 14, 30, 8 and 23) and for the rejection of claim 33 the Office Action refers to nine different passages in Schultz (columns 6, 10, 14, 30, 8, 23, 5, 10 and 2). These passages span a number of different embodiments of Schultz. For example in the rejection of claim 1, one embodiment cited by the Office Action at column 6 discusses a polynucleotide present as a separated band in an electrophoresis gel with PRPs exposed to the surface of the gel, another embodiment cited at column 10 discusses particles on a particle coated silver film, another embodiment cited at column 30 discusses PRPs subject to electrophoresis, and still another embodiment cited at column 23 discusses ligands attached to particles. For the present rejection to stand, "the elements must be arranged as required by the claim" and, as shown above, the elements in Schultz are randomly located in the reference spanning twenty four columns and are not arranged as required by the claim.

Therefore, for at least the reasons set forth above, Schultz fails to teach each and every element of the claimed subject matter. In addition, the elements in Schultz are not arranged as required by the claims. Accordingly, Applicants submit that the claimed invention would not have been anticipated by Schultz and, therefore, respectfully request that the rejection of the claims under 35 U.S.C. § 102(b) of claims 1-5, 7-12, 33 and 34 be withdrawn.

### **III. Rejection Under 35 U.S.C. §103**

Claim 6 is rejected under 35 U.S.C. §103, as allegedly being unpatentable over Schultz et al. (US 6,180,415) in view of Mirkin et al. (US 2003/0211488). Applicants respectfully traverse this rejection.

Claim 6 depends on claim 1. Applicants have shown above that claim 1 is not anticipated by Schultz et al. The addition of Mirkin et al. does not provide the teachings that are missing from Schultz et al. Accordingly, Applicants submit that the claimed invention would not have been obvious in view of the cited references and, therefore, respectfully request that the rejection of claim 6 under 35 U.S.C. §103 be withdrawn.

In re Application of  
Su et al.  
Application No.: 10/750,301  
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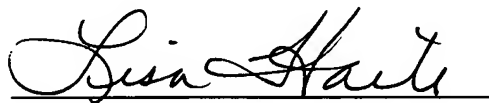
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**IV. Conclusion**

In view of the amendments and above remarks, it is submitted that the claims are in condition for allowance, and a notice to that effect is respectfully requested. The Examiner is invited to contact Applicant's undersigned representative if there are any questions relating to this application. Applicants do not believe any other fees are due in connection with this submission, however if any other fees are due, please charge any fees, or make any credits, to Deposit Account No. 07-1896.

Respectfully submitted,

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